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Replication

The complexity of employment and family life courses across 20th century Europe: More evidence for larger cross-national differences but little change across 1916–1966 birth cohorts

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Abstract

BACKGROUND
There has been much debate whether work and family lives became more complex in past decades, that is, exhibiting more frequent transitions and more uncertainty. Van Winkle and Fasang (2017) and Van Winkle (2018) first benchmarked change in employment and family complexity over time against cross-national differences in 14 European countries. Compared to sizeable and stable cross-national differences, the increase in employment and family complexity was small across cohorts. However, these studies could not include cohorts born past the late 1950s assumed to be most affected by the structural changes driving life course complexity and were limited to a relatively small set of West European countries.

OBJECTIVE
We replicate and extend these studies by adding over 15 additional countries in Eastern Europe and a decade of younger birth cohorts.

METHODS
The 3rd and 7th waves of the Survey of Health, Ageing, and Retirement in Europe, sequence complexity metrics, and cross-classified modelling are used to simultaneously quantify the proportions of variance attributable to cohort and country differences in work and family lives between ages 18 to 50.

RESULTS
The updated findings still support a negligible increase in family complexity and a moderate increase in employment complexity that pale in comparison to large and stable cross-national differences for individuals born between 1916 and 1966 for work and family lives experienced from 1934 to 2016 in 30 European countries. Specifically, 15

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and 10% of employment and family complexity is nested across countries, compared to 5.5 and 2% across birth cohorts. However, the analyses also indicate a polarization in Europe between most Eastern and Southern European countries with stable and low family complexity compared to Nordic and some Western European countries with high and increasing family complexity. In contrast, moderately increasing employment complexity is a Europe-wide trend.

CONCLUSIONS

This study both replicates the original studies' findings that cross-cohort change is minor compared to large cross-national differences, and is a substantive extension by addressing a large deficit of description on family and employment life course change in the Balkan and Baltic regions.

1. Introduction

A core question in social research concerns how social structures, including social policies, and normative and structural environments shape individual lives. Among many relevant outcomes of individual lives, the complexity of life courses came into the spotlight in recent debates about rising employment precarity and family instability (Kalleberg and Vallas 2017; Thomson 2014). In life course research, complexity is based on Brückner and Mayer's (2005) concept of life course differentiation: a process where the number of transitions and distinct states across the life time increases. Life course research has further underlined that more differentiated and complex lives entail increasing unpredictability and uncertainty, which are thought to burden individuals (Beck 1991; 2000). Studies on employment careers use complexity as an indicator for precarity, which explicitly includes both recurrent movements between fixed term low quality jobs and nonemployment as well as uncertainty and unpredictability about future job opportunities (Kalleberg and Vaisey 2005). Studies on family life courses have used complexity as an indicator for family instability, which is generally understood as the increasing frequency of non-normative family transitions across the life course (Cavanagh and Fomby 2019; McLanahan and Percheski 2008). All of these approaches to life course instability have in common that they cover changes between multiple life situations over longer periods of time.

Unstable life courses like moving between different jobs and unemployment, or recurrently changing family situations, are often thought to be detrimental for individuals and their family members (Benach et al. 2014; Cooper et al. 2009; Hill et al. 2013; Lee and McLanahan 2015). But moving between different jobs and family situations can also be seen as a hallmark of liberal societies, where individuals are free to choose and readjust

life paths (Beck 1991, 2000). Life courses have been found most stable and uniform in the regulative communist societies of Eastern Europe and the dictatorships in Southern Europe in the 1950s and 1960s. This can hardly be seen as an indication of a generally desirable life course outcome (Fasang 2014). Before answering the empirical and normative question, whether life course instability is associated with desirable or undesirable outcomes, one has to establish whether life course instability has really increased over the past decades.

To answer these questions, a convincing conceptualization and measurement of life course instability is necessary. In recent years, a burgeoning literature used sequence analysis to conceptualize and measure life course instability as the complexity of longitudinal life course sequences (Elzinga and Liefbroer 2007; Gabadinho et al. 2010; see Pelletier, Bignami-Van Assche, and Simard-Gendron 2020 for a review). Studies have focused on the complexity of employment careers (e.g., Biemann, Fasang, and Grunow 2011; Ciganda 2015; Struffolino 2019; Struffolino and Raitano 2020; Van Winkle and Fasang 2017), retirement processes (e.g., Fasang 2012; Riekhoff 2016, 2018), and family life courses (Elzinga and Liefbroer 2007; Mynarska et al. 2015; Ramos 2019; Tocchioni 2018; Van Winkle 2018; 2019). An advantage of this complexity measure over simple count variables is that they can take into account recurrent changes between categorical states, such as unemployment or education, as well as the extent of unpredictability within life course trajectories (see details below). Moreover, the complexity index can be weighted to highlight differential meanings attached to life course transitions, for example whether an employment move was voluntary or involuntary (Van Winkle and Fasang 2017). Most studies on life course complexity are motivated by the perception among scholars and the general public that lives have indeed become more complex across time. Economic restructuring and recession, globalization and new human resource management schemes, technological change, and occupational polarization are all assumed to have increased employment complexity by inciting more frequent moves in and out of employment and between jobs (Hollister 2011). The Second Demographic Transition (SDT) is the most prominent account of family complexity, postulating a decline in marriage and parenthood, increase in separation, nonmarital cohabitation and parenthood, as well as step-family arrangements due to a shift from materialist to postmaterialist values (Lesthaeghe 2014). Recent evidence suggests that family complexity might rather result from structural disadvantage, that is a lack of socioeconomic opportunities, rather than changing values (Mills and Blossfeld 2013). McLanahan (2004) highlighted a polarization of low family complexity among economically resourceful families compared with increasing family complexity among economically deprived families in the United States and several European countries (McLanahan and Jacobsen 2015). Studies on employment complexity or precarity and family instability often concentrate on one country and use cross-temporal variation to

account for change across birth cohorts (Aassve et al. 2007; Baizán, Michielin, and Billari 2002; Bras, Liefbroer, and Elzinga 2010; Chaloupková 2010; Robette 2010; Simonson, Romeu Gordo, and Titova 2011). For example, Biemann, Fasang, and Grunow (2011) studied whether globalization leads to more complex employment trajectories among West Germans born between 1929 and 1971. They find only a moderate increase in employment complexity that is not systematically linked to increasing economic globalization.

Contrary to common conjectures, two recent studies demonstrated that although employment and family lives became moderately more complex across birth cohorts, differences across countries are considerably larger. Van Winkle and Fasang (2017) used life history data from the third wave of the Survey of Health, Ageing, and Retirement in Europe (SHARE) to follow individuals' employment lives from ages 15 to 45. They show that only 2% of the variance in employment complexity is attributable to cross-temporal differences, while 15% could be accounted for by differences across countries. Van Winkle (2018) used the same data source following individuals from ages 15 to 50, as well as the Generations and Gender Survey (GGS), and found that less than 2% of family life course complexity variation can be traced back to cohort differences, but cross-national differences could account for 10% of the variance. Moreover, both studies found little evidence for country-cohort interactions. In other words, few birth cohorts within single countries deviated from the average trend for all countries towards more complex employment and family life courses.

Both studies used a novel methodological approach, incorporating sequence-based complexity metrics with cross-classified random-effects modelling. This methodological strategy allows to use cross-national differences as a benchmark for whether change across time could be considered substantial or not. This is important for at least two reasons. First, traditional statistical significance testing has recently come under fire and numerous authors and journals have advocated abandoning it altogether (McShane et al. 2019). Bernardi, Chakhaia, and Leopold (2016) recommend that researchers use informed benchmarking to reduce the overemphasis of statistical significance and highlight the social significance of research findings. The studies by Van Winkle and Fasang (2017) and Van Winkle (2018) accomplish this by using cross-national differences as a reference point to gauge whether cross-temporal differences are meaningful or not. Second, Van Winkle and Fasang's (2017) and Van Winkle's (2018) argument that cross-cohort differences are relatively small has important implications for comparative labour market, family and life course sociology: cross-national research designs, rather than cohort comparisons, are particularly promising to untangle how institutions shape the complexity of work and family life courses.

However, both studies were based on a limited sample of countries (N = 14) and birth cohorts (N ≈ 13 from 1924–1956). A core criticism of the original studies was that

they missed younger birth cohorts born in the 1960s that were among the most affected by the structural and normative changes assumed to increase life course instability, including economic restructuring and skill biased technological change. If indeed employment and family complexity sharply increased for the cohorts born in the 1960s who experienced their early to mid-adult life courses between the 1980s and early 2000s, the argument would be limited to the earlier historical period covered in their original studies. A second core criticism was that the selection of countries was heavily skewed towards North- and Southwest Europe (10 of 14 countries): Austria, West Germany, the Netherlands, France, Switzerland, Belgium, Sweden, Denmark, Spain, and Italy. East and Central Europe was only represented by the Czech Republic, Poland, and East Germany. Greece was the only representative of Southeast Europe or the Balkans.

In this study we propose a replication and extension of Van Winkle and Fasang (2017) and Van Winkle (2018) to assess whether the core argument of more life course variation across countries than across time holds for younger birth cohorts and in a boarder range of countries. First, we add one decade of new birth cohorts (up to 1966) that includes birth cohorts assumed to be particularly affected by structural driving forces increasing life course complexity. Our study follows in the steps of Van Winkle and Fasang (2017) and Van Winkle (20018) in questioning the common sense messages in sociology and broader society that life courses have become more complex, unstable, and unpredictable than in the early 20th century (Walsh 2012; Beck 1991, 2009; Sennet 2006). In addition, we extend the analysis including the seventh wave of SHARE, that allows us to include 15 additional countries. Next to Luxembourg, Portugal, and Finland as additional representatives of North and Southwest Europe, we add Slovakia and Hungry to the sample of East and Central European countries, as well as Cyprus, Malta, and Israel. Most importantly, for the first time, we are covering two areas of Europe that are nearly nonexistent in the current literature on employment and family life course change: former Yugoslavian and Southeast Balkan countries – Croatia, Slovenia, Romania, and Bulgaria – as well as the former Soviet Baltic countries – Lithuania, Latvia, and Estonia. Individual life courses in these two regions will likely be inevitably different from other East European and especially West European countries. On the one hand, the state socialist regimes in both regions likely standardized employment and family life courses to a degree at least as strong as the former state socialist regimes of East and Central Europe. However, the transition of these societies to liberal market democracies was even more tumultuous. The most poignant example is the nearly decade of war and conflict following the dissolution of former Yugoslavia, which will most likely have led to extremely fractured and complex family and employment lives. Following independence, the GDP of Lithuania, Latvia, and Estonia dropped up to 44%, 59%, and 67% by 1996 compared to 1989, which is somewhat less than Central European economics, e.g., 80% in the Czech Republic and Hungry. However, inflation far surpassed Central European

levels reaching up to 69% in Estonia, 73% in Latvia, and even 231% in Lithuania between 1993 and 1994. Unemployment, precarious employment, and economic hardship likely and had spill over effects on Baltic family life courses. The inclusion of Balkan and Baltic countries therefore increases variation in country contexts covered for the original goal of benchmarking cross-national differences in life course complexity relative to change over time. Yet it is also a substantive extension by addressing a large deficit of description on family and employment life course change in in the Balkan and Baltic regions.

2. Data and methods

2.1 Sample and sequence definitions

We follow Van Winkle and Fasang (2017) and Van Winkle (2018) to define sequence states, calculate sequence complexity, and decompose sequence complexity variation across countries and birth cohorts. Our analyses are based on the Survey of Health, Ageing, and Retirement (SHARE).[3] The target population of SHARE is individuals age 50 and older at the time of data collection and refreshment sampling, but SHARE also collects information from and on respondents' spouses as well as other household and nonhousehold members. We include respondents and their partners who conducted a life history interview in the 3rd wave of SHARE (SHARELIFE) collected between autumn of 2008 and 2009 in 14 countries used in the original studies by Van Winkle and Fasang (2017) and Van Winkle (2018). We add SHARELIFE interviews conducted in the 7th wave of SHARE collected in 2017 and 2018. Life histories were collected for respondents and spouses of 12 countries included in the 3rd wave without a SHARELIFE interview and all respondents and spouses of 15 additional countries that joined SHARE since wave 3. The sample of life histories comprises 28,295 individuals from the 3rd wave of SHARE

[3] This paper uses data from SHARE Waves 3 and 7 (DOIs: 10.6103/SHARE.w3.710 and 10.6103/SHARE.w7.711) and data from the generated Job Episodes Panel (DOI: 10.6103/SHARE.jep.710), see Brugiavini et al. (2019) for methodological details. The Job Episodes Panel release 7.1.0 is based on SHARE Waves 3 and 7 (DOIs: 10.6103/SHARE.w3.710 and 10.6103/SHARE.w7.710). See Börsch-Supan et al. (2013), Börsch-Supan (2020a; 2020b), and Brugiavini et al. (2020) for more details. The SHARE data collection has been funded by the European Commission through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812), FP7 (SHARE-PREP: GA N˚211909, SHARE-LEAP: GA N˚227822, SHARE M4: GA N˚261982, DASISH: GA N˚283646) and Horizon 2020 (SHARE-DEV3: GA N˚676536, SHARE-COHESION: GA N˚870628, SERISS: GA N˚654221, SSHOC: GA N˚823782) and by DG Employment, Social Affairs and Inclusion. Additional funding from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the US National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064, HHSN271201300071C) and from various national funding sources is gratefully acknowledged (see www.share-project.org).

and 61,466 individuals from the 7th wave, born between 1916 and 1966 in 28 European countries, with retrospectively collected annual information on educational and employment status, as well as parenthood and partnership status from ages 15 to 50.

We conceptualize individual employment trajectories by combining the school-to-work transitions with moves between employers and transitions in and out of employment. Each individual sequence is composed of 35 consecutive years. States are defined either as (1) in education, (2) in full-time employment, (3) in part-time employment, (4) unemployed, (5) inactive, or (6) in retirement. Employment states additionally include a job spell number to distinguish mobility between jobs from the first, second, to nth job. We filled in missing states between the years 1939 and 1955 with a WWII gap state. We also included general gap states for persons with missing state information for a maximum of six years. This allowed us to retain 3,270 additional individuals with one to six years of missing values out of 35 observation years in our analyses. In total, 2,917 person-years (0.10%) were filled with the WWII gap state and 9,668 person-years (0.32%) were filled with the missing state. As these states only accounted for 0.42% of the total states across all time points, it is extremely unlikely that the inclusion of these states distorted our findings.

Family sequences are also composed of 35 consecutive annual states. Each sequence state is either (1) in the parental home, (2) single, (3) cohabiting, or (4) married. Further, each state element can be extended by the presence of at least one child: for example, married with at least one child. Note that "single" indicates that the respondent was neither in the parental home nor cohabitating; it does not specify the relationship status of the respondent in terms of living apart together relationships. Both suggest that we might slightly underestimate family complexity, but likely not systematically in a way that would invalidate our country and cohort comparisons. As only 1.5% (N = 1,376) of cases have a missing state, we follow Van Winkle (2018) and drop cases with missing states. Our analysis sample was 85,025 employment sequences (94.7% of the original sample) and 88,394 (98.4% of the original sample) family sequences after deletion of trajectories with missing states. An overview of sample sizes by country and cohort for employment sequences and family sequences can be found in Tables A-1a and A-1b, respectively.

The SHARELIFE data were collected retrospectively from elderly respondents between the ages of 50 up to age 100, posing the problem of recall error and selective mortality. Recall error may cause an underestimation of family life course complexity, especially in the early cohorts and in countries with high complexity levels. However, Havari and Mazzonna (2015) compared information collected in the SHARELIFE childhood circumstances module with national registry data and concluded that recall error does not seem to compromise the validity or usefulness of the data. Both aggregate levels and the social class gradient of life expectancy differ across our cohorts and

countries and thereby individuals' probability to survive until the survey differs by a combination of social class background, cohort, and countries. For our analysis selective mortality of study participants would be most problematic, if life course complexity was strongly linked to mortality and this association varied greatly and systematically across countries and cohorts. As of now, there are no studies on the link between life course complexity and mortality. Assuming that lower educated individuals have lower life expectancy and higher life course complexity on average, we risk underestimating life course complexity for older cohorts, in which lower educated individuals with highly complex lived did not survive until the survey. As a result, we would overstate an increase of life course complexity across cohorts, missing the more complex lives of among older cohorts. Our estimates of the increase of life course complexity across cohorts, then, if anything, are too large due to selective mortality. However, the negative association between education and life course complexity is unlikely to hold during communism in the Eastern Europe, and has also not been found for many Northern European countries. We therefore assume that selective mortality of the lower educated particularly among older cohorts plays a minor role for our cohort-specific complexity levels.

Across countries life expectancy is notably higher around age 80 in Western Europe compared to around 70 in many Eastern European countries (Klenk et al. 2016). Mortality is fairly similar within these two broader groups of countries. Our cross-national variation in life course complexity would therefore, if anything, be distorted between these two larger groups of countries and potentially overstate cross-national differences. But this is unlikely. First, the link between education and life course complexity is weaker in Eastern Europe due to the communist past. Earlier selective mortality of the lower educated in Eastern European countries is therefore less likely to be systematically linked to life course complexity. Importantly, age-specific mortality rates across countries start to diverge in the late 50s, and mainly differ around age 70 (Eurostat 2002a, 2002b). Because SHARE begins interviewing at age 50, and our observation period of the life course ends at age 50, it is highly unlikely that country-specific differences would greatly distort the extent of cross-national variation in life courses in our analysis.

2.2 Sequence complexity

We use a composite measure developed in sequence analysis to assess the complexity of sequences of categorical states: the sequence complexity index. This index measures variability within sequences as the geometric mean of normalized sequence transitions and normalized longitudinal sequence entropy (Gabadinho et al. 2010, 2011). Formally, the complexity, C, of a sequence, x, is defined as follows:

$$C(x) = 100 * \sqrt{\frac{q(x)}{q_{max}} * \frac{h(x)}{h_{max}}}, \quad (1)$$

where the number of transitions within a sequence, q(x), is divided by the theoretical maximum number of transitions possible, q_{max}; the longitudinal entropy of a sequence, h(x), is divided by the theoretical maximum, h_{max}.

Longitudinal sequence entropy is

$$h(x) = -\sum_i^s \pi_i log \pi_i, \quad (1a)$$

where π is the proportion of occurrences in a given state, *i*, of the sequence alphabet, *s*. Entropy within sequences is maximal when each state occurs an equal number of times, which reflects that the unpredictability of a given state is maximal. We multiply the complexity by 100 to range between 0 and 100. Complexity is minimal in sequences composed of a single state and maximal in sequences that contain each state element with equal durations and have the maximum number of transitions. The complexity index provides a more nuanced indicator of life course differentiation compared with just the number of transitions or distinct states because the degree of uncertainty within life courses is incorporated through sequence entropy. In addition, multiple transitions between different states are captured, not just the number of a specific transition. Nonetheless, the average number of transitions in employment sequences and family sequences by country and cohort are displayed in Tables A-2a and A-2b, respectively. Both tables show a general increase in the average number of transitions across birth cohorts and countries and substantiate conclusions from the main models using the complexity index.

2.3 Cross-classified variance decomposition models

Cross-classified random-effects models are used to investigate levels of sequence complexity across countries and cohorts but also to decompose the proportion of complexity variance attributable to countries and to cohorts. These models represent a special case of multilevel modelling in which the higher-level units cannot be hierarchically ordered (Rabe-Hesketh and Skrondal 2012: 433–460; Snijders and Bosker 2012: 155–165). Individuals are cross-classified by birth cohort membership and country of residence. Formally, sequence complexity is modelled as follows:

$$y_{ijk} = \beta_0 + \zeta_j + \zeta_k + \zeta_{jk} + \varepsilon_{ijk}, \quad (2)$$

where the sequence complexity, y_{ijk}, is composed of the constant β_0 (i.e., the grand mean); the group-specific error terms, ζ_j, ζ_k, and ζ_{jk}; and the individual error term, ε_{ijk}. The variance attributable to countries and birth cohorts is identified through country- and birth cohort-specific deviations from the grand mean, ζ_j and ζ_k, respectively. The group-specific deviations from the constant are also referred to as random intercepts or effects. Change caused by universal trends that affect cohorts identically across all countries will be captured in the cohort-specific deviations, whereas country-specific differences across all cohorts will be captured by the country-specific deviations. To capture country-specific change across birth cohorts, the additive cross-classified model is extended through an interacted random effect, ζ_{jk}. The relative proportion of complexity variance that is accountable to country- or birth cohort–specific differences are calculated as intraclass correlation coefficients (ICC), ρ:

$$Var(y_{ijk}) = Var(\zeta_j + \zeta_k + \zeta_{jk} + \varepsilon_{ijk}) = \psi_j + \psi_k + \psi_{jk} + \sigma, \quad (2a)$$

$$\rho_{Country} = \frac{\psi_j}{\psi_j+\psi_k+\psi_{jk}+\sigma}, \quad (2b)$$

and alternatively

$$\rho_{Cohort} = \frac{\psi_k}{\psi_j+\psi_{k+\psi_{jk}}+\sigma}, \quad (2c)$$

where σ is the constant variance of the Level 1 residuals; and ψ_j, ψ_k, and ψ_{jk} are the variances of the country-specific, cohort-specific, and interacted random intercepts, respectively, of the parameters in Equation (2). Equation (2b) calculates the correlation of observations from the same country but different cohorts by dividing the country-specific variance by the total variance. Likewise, Equation (2c) calculates the correlation of observations from the same cohort but different countries. In the following section, we first decompose the variance of employment and family sequence complexity using additive and interacted cross-classified random effects regressions. This allows us to quantify the proportion of variance attributable to country differences versus change across cohorts.

In a second step, we assess average levels of employment and family complexity across countries and cohorts using empirical Bayes estimates of the country and cohort random effects. Finally, we use the empirical Bayes estimates of the interacted country-cohort random effect to determine whether countries deviate substantially from the average cohort trend. Empirical Bayes predictions differ from maximum likelihood estimates by continuing to treat the random intercepts, ζ_j, ζ_k, and ζ_{jk}, as random variables and not fixed parameters (see Rabe-Hesketh and Skrondal 2012: 106–115 for an

introduction and discussion). Our predictions use the prior distributions of the random intercepts with a zero mean and estimated variances of ψ_j, ψ_k, and ψ_{jk}, respectively. This prior distribution represents what we know about the random intercepts before the real responses, for example y_{1j}, y_{2j}, … y_{nj} for ζ_j. Those prior distributions are combined with the estimated conditional distribution – or likelihood – of the real responses given the random intercepts. The empirical Bayes predictions displayed below are based on this posterior distribution, which represents the updated knowledge regarding our random intercepts after considering the real data. A potential pitfall of empirical Bayes predictions is that their means over repeated samples of clusters and units from clusters, in our case countries, cohorts, and country-cohorts, will be too close to zero. This is known as shrinkage, where the empirical Bayes prediction of small clusters is skewed towards the mean of zero. However, in our case shrinkage is desirable because, because small and potentially less reliable clusters borrow power and information from larger and potentially more reliable clusters, while reducing the influence of small clusters on others.

3. Results

3.1 Decomposition of employment and family complexity

The results of the cross-classified variance decompositions are displayed in Table 1. Overall findings substantiated the conclusions from Van Winkle and Fasang (2017) and Van Winkle (2018) also including twice as many countries and a decade of younger birth cohorts: Considerably more variation in the complexity of employment and family trajectories was attributable to cross-national differences compared to change over time. For employment trajectories, 14.6% of the variance in sequence complexity could be ascribed to differences across countries (15% in Van Winkle and Fasang 2017), and 5.5% to change across birth cohorts (2% in the original study) (see column 1 of Table 1). Accordingly, while variation across cohorts is still substantially smaller, it increased moderately for the youngest cohorts included in this update. Findings thereby support that the structural changes noted above indeed moderately increased employment complexity across Europe. For family trajectories, cross-temporal differences could account for less than 2% of the variance of sequence complexity, while roughly 10% are due to cross-national differences (equally 2 and 10% Van Winkle 2018).

Table 1: Cross-classified decomposition results

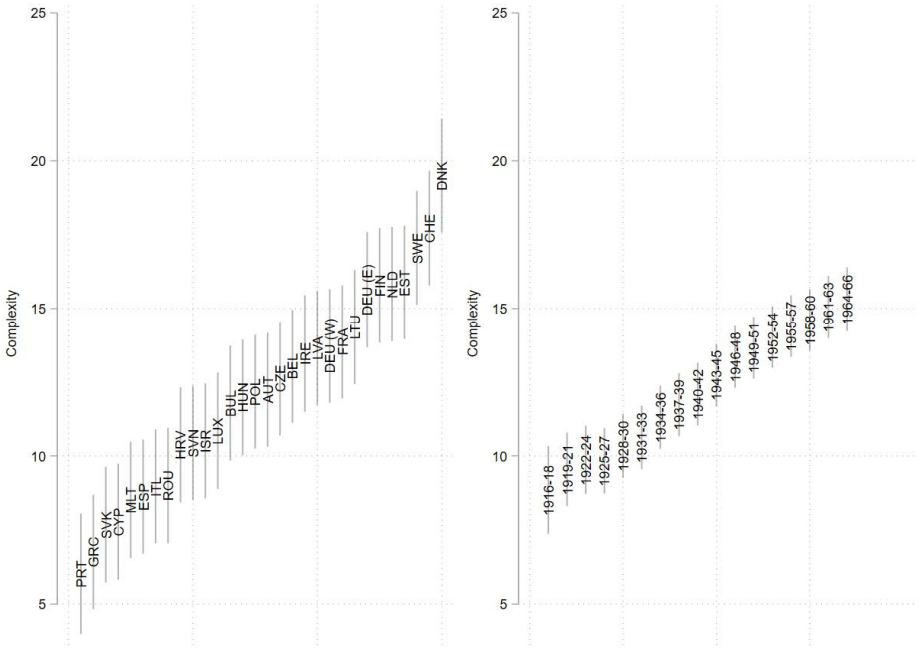
Fixed Effects	Employment (Additive)	Employment (Interacted)	Family (Additive)	Family (Interacted)
Constant	12.21 [10.63 – 13.79]	12.19 [10.60 – 13.79]	13.63 [12.93 – 14.32]	13.67 [13.0 – 14.31]
Random Effects				
Var(Country) – ψ_j	11.7 [6.98 – 19.62]	11.76 [7.01 – 19.73]	2.81 [1.67 – 4.71]	2.41 [1.42 – 4.07]
Var(Cohort) – ψ_k	4.42 [2.18 – 8.95]	4.54 [2.23 – 9.22]	0.52 [0.25 – 1.08]	0.41 [0.19 – 0.90]
Var(Interaction) – ψ_{jk}		0.34 [0.25 – 0.47]		0.49 [0.40 – 0.59]
Var(Individual) – σ	63.64 [63.04 – 64.25]	63.36 [62.76 – 63.97]	23.59 [23.37 – 23.81]	23.21 [22.99 – 23.43]
Intraclass Correlations				
$\rho_{Country}$	14.67	14.69	10.42	9.07
ρ_{Cohort}	5.54	5.67	1.92	1.55
N – Individuals	85,025	85,025	88,394	88,394
N – Countries	30	30	30	30
N – Cohorts	17	17	17	17

Note: Unstandardized regression coefficients displayed; 95% confidence intervals in brackets. Data not weighted.

3.2 Employment complexity across countries and birth cohorts

Empirical Bayes estimates of the country and cohort random effects from the interacted cross-classified model for employment complexity are presented in Figure 1. Comparing the left and right panel of Figure 1 again underscores how substantial country differences are compared to cohort change. As can be seen in Figure 1, countries broadly map on to welfare state regime types in terms of employment complexity. Southern European countries – Portugal, Greece, Cyprus, Malta, Spain, and Italy – had the least complex trajectories. Somewhat more complex but still below average were the Balkan countries – Romania, Croatia, Slovenia, and Bulgaria. Countries with average complexity included Eastern European countries – Hungary, Poland, and the Czech Republic – but also countries classified in the Western European conservative-corporatist regime – Luxembourg, Austria, Belgium, West Germany, and France. Countries with the highest average complexity were from the Scandinavian social democratic regimes – Denmark, Sweden, and Finland – as well as conservative Western European countries – the Netherlands and Switzerland – and East Germany. East Germany shows relatively high employment complexity, which is an unexpected outlier from the perspective of welfare state regimes and might be related to the distinct mobility regime during communism and reunification process in East Germany (see also Van Winkle and Fasang 2017). Among the Baltic States, Estonia resembles its Scandinavian neighbours, while Latvia and Lithuania are closer to West Germany and France.

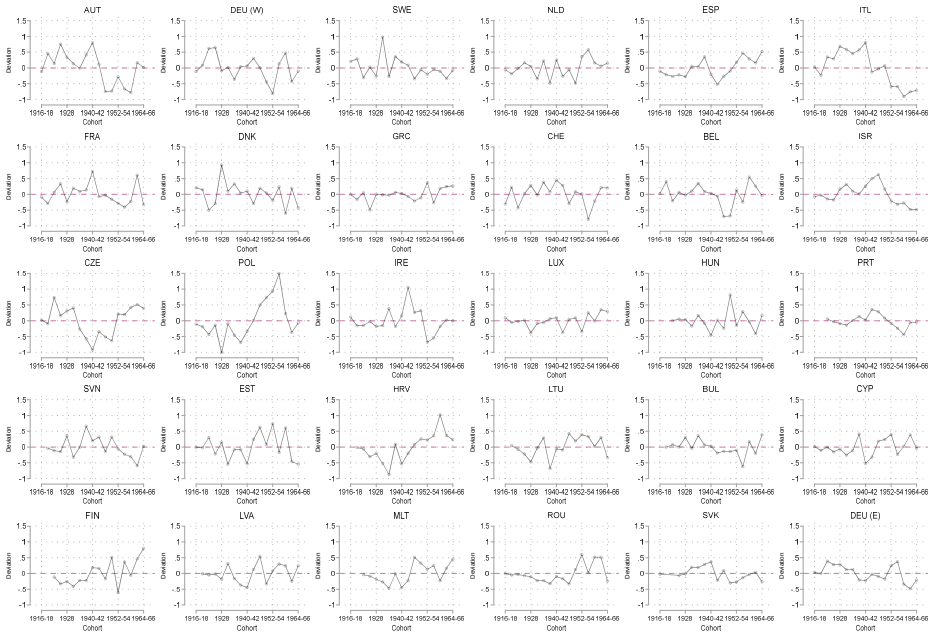
Figure 1: Empirical Bayes estimates of employment complexity by cohort and country



Although country differences are larger than differences across cohorts, the trend towards increasing complexity is more prominent including a decade of younger birth cohorts than in Van Winkle and Fasang (2017). Indeed, the proportion of complexity variance attributable to change across time is more than twice as large as was previously found. Our results highlight that changes in the two decades between 1980 and 2000, when the 1960s cohorts were entering and establishing themselves on the labour market, lead to an overall trend of increasing employment complexity that is substantively significant albeit moderate. The average trend across our sample of European countries increases from below average levels typical of Southern Europe to above average levels typical of East Germany, Finland, the Netherlands, and Estonia. Moreover, the trend towards increasing complexity is approximately linear: there is no evidence that a certain birth cohort or cohorts were suddenly affected by a period event that increased only their average complexity levels. Figure 2 shows the empirical Bayes estimates of the country-cohort random effects, which are presented as country-specific deviations from the cohort trend shown in Figure 1. However, we find no deviations from the overall cohort trend

within countries that are statistically different from zero ($p > 0.05$). This is supported by the near zero variance component of the interacted random intercept (0.34), which is less than a tenth of the next largest cohort variance component (4.54).

Figure 2: Empirical Bayes estimates of country-specific deviations from cohort employment complexity

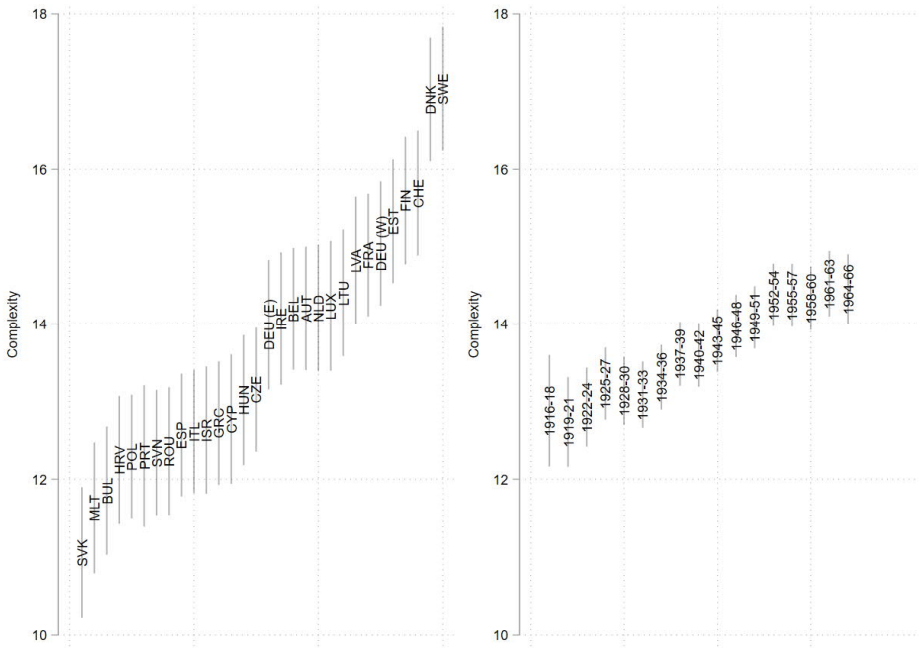


3.3 Family complexity across countries and birth cohorts

Figure 3 is analogous to Figure 1, but displays the empirical Bayes estimates for the country and cohort random effects from models on the complexity of family sequences. Again, when comparing the left and right panels in Figure 3, cross-national differences are substantially larger than change over time. The order of the countries from least to most complex in Figure 3 also matches common welfare state groupings, although to a lesser degree than for employment trajectories. The least complex family sequences could be found in Eastern Europe – Slovakia, Poland, Hungary, and the Czech Republic –

Southern Europe – Malta, Portugal, Spain, Italy, Greece, and Cyprus – as well as countries in the Balkans – Bulgaria, Croatia, Slovenia, and Romania. Another tight group of countries with slightly above average family complexity were mainly members of the Western European conservative-corporatist welfare regime – Belgium, Austria, the Netherlands, and Luxembourg – as well as East Germany, Ireland, and Lithuania. Sweden and Denmark are two countries with the most complex family sequences. Between them and the former group of Western European countries lie Estonia, Finland, and Switzerland on the upper end and Latvia, France, and West Germany on the lower end.

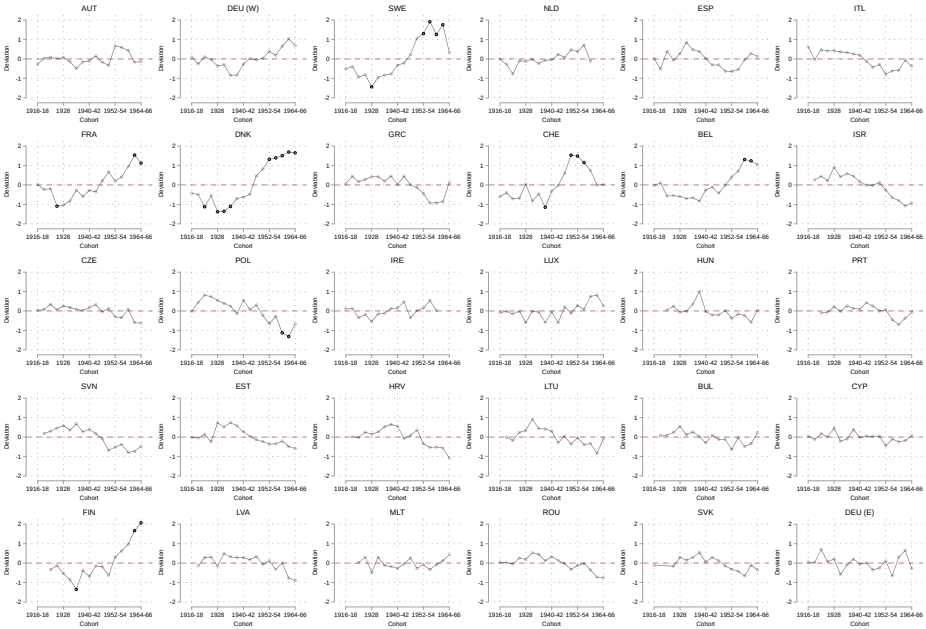
Figure 3: Empirical Bayes estimates of family complexity by cohort and country



Although the birth cohort estimates indicated a trend towards more complex family life courses, as shown in the right panel of Figure 3, that upward trend is less pronounced than for employment trajectories. In fact, the results demonstrated that average complexity was relatively stable for cohorts born between 1916 and 1936, before continually increasing between the 1934 and 1954 cohorts. After 1954 there was no increase in the complexity of family sequences across our countries. However, in contrast

to employment complexity, we found numerous country-specific deviations from that trend, especially located among the youngest birth cohorts. The empirical Bayes estimates of the country-cohort random effects for family complexity are displayed in Figure 4. Younger cohorts from the Scandinavian social democratic countries – Sweden, Denmark, and Finland – as well as some Western European countries – France, Switzerland, and Belgium – have considerably higher average complexity levels than the general cohort trend (roughly 2 points or 15% above the cohort mean). This indicates that there may be a polarizing trend in the complexity of family life courses in Europe: while most of Europe experienced no increases in complexity following cohorts born in the mid-1950s, the complexity of family trajectories continues to increase in Scandinavian countries and a few Western European countries.

Figure 4: Empirical Bayes estimates of country-specific deviations from cohort family complexity



Black markers denote statistically significant (p > 0.05) deviation from zero.

3.4 Additional analyses

In addition to the analyses above, we decomposed the complexity of employment and family trajectories for men and women separately. The results of these models can be found in Table A-1 in the appendix. In line with changing gender relations on the labour market in the past decades, the proportion of variance for both employment and family sequences attributable to country and cohort differences is larger for women than for men. Roughly 18% of women's employment complexity variance can be accounted for by cross-national differences and 8% by cohort differences, this is only 12% and 2%, respectively, for men. Similarly, only 8% of men's family complexity variance is due to country differences and 1% to change over time, compared to 11% and 2%, respectively, for women. The ordering of countries from lowest to highest average employment and family complexity for men and women is substantively similar to those presented above. While both family complexity increases for both men and women across cohorts, this increase is more pronounced for women attesting to women's increasing employment participation over our observation period in most European countries (depictions of country and cohort ordering available from authors upon request).

We also estimated cross-classified decompositions on complexity values that are weighted for durations spent in distinct states. Van Winkle and Fasang (2017) and Van Winkle (2018) were both interested in establishing which employment and family states were driving the country and cohort differences they observed. In a similar fashion, we multiplied employment and family complexity by the square root of the number of years spent in distinct employment and family states plus one. Note that the addition of one ensures that complexity does not become zero for individuals who do not experience the state being studied and the square root safeguards against the creation of outliers. The intraclass correlation coefficients of these models are displayed in Table A-2 in the appendix. For employment complexity, we find that country differences in time spent in education and part-time employment are particularly important. Education and unemployment also play a significant role for cross-cohort differences in employment complexity. The moderate increase in employment complexity is therefore driven both by educational expansion and a higher probability of ever or recurrently experiencing unemployment for younger cohorts.

For the complexity of family trajectories, the results point to the role of time spent in singlehood – usually between the parental home and marriage – for cross-national differences. Notably, in countries with higher complexity values such as Sweden and Denmark, independent single living is more wide-spread and of longer duration compared to countries in which family complexity is lower, such as Poland and Portugal. Time spent in cohabiting relationships with and without children as well as time spent in divorce with children are integral elements of cohort differences in family complexity, which corresponds to trends associated with the SDT. Accordingly, the small increase of

family complexity over time is driven by increases in cohabitation and divorce with and without children – among some countries, but not among others (see above).

4. Discussion

This study replicated and extended two recent articles on the complexity of employment life courses (Van Winkle and Fasang 2017) and the complexity of family life courses (Van Winkle 2018). Specifically, we addressed a core criticism of both studies: we expanded the limited sample of countries and birth cohorts by adding more than 15 new countries and a new decade of younger birth cohorts born in the 1960s. Findings substantiated the original conclusions and added information on cross-country and cross-temporal variation in employment and family life course complexity.

First, we corroborate the previous findings that contrary to common conjectures increases in employment and family life course complexity have been moderate in 20th century Europe. This conclusion applies to individuals born between 1916 and 1966 who were between the ages of 15 and 50 from 1934 to 2016 in 30 European countries. These are precisely the cohort whose employment and family trajectories are thought to be most complex due to economic restructuring and recession, globalization and new human resource management schemes, technological change, occupational polarization (Hollister 2011), as well as the onset of the SDT (Lesthaeghe 2014).

However, our study relied on analyses with annual units of observation, as opposed to monthly employment or cohabitation spells, which may inhibit a careful evaluation of the fragmentation of individual life courses and lead to an underestimation of life course complexity. Future research on life course complexity should use finer grained life history data where it is available. Moreover, although we add another decade of birth cohorts, we still miss birth cohorts who entered the labour market before the labour market deregulation processes that took place in Europe at the end of the 20th and beginning of the 21st centuries. However, it is not yet possible to empirically assess the complexity of long-life trajectories, e.g., from age 18 to 50, of more recent birth cohorts, because these cohorts are still in the middle of their employment careers. Although it is possible that these more recent cohorts will have higher levels of complexity due to labour market deregulation, it is also possible that stability in later life may counteract instability in early life. The same holds for our cross-temporal analysis of family life course complexity. While our study captures birth cohorts affected by the second demographic transition in Northern and Western Europe, we likely only capture early traces of the second demographic transition in Southern and Eastern Europe. As more recent birth cohorts age and their long-life histories become available, our study will need to be updated once again, especially when the impact of the financial recession and the

coronavirus pandemic become observable. More generally, empirical evidence on how life course complexity is associated with mortality would be both substantively highly relevant and methodologically useful to inform potential biases in cross-national complexity estimates due to selective mortality of participants in retrospective life history interviews.

Second, by benchmarking change in life course complexity across cohorts against stable differences across countries, we can contextualize effect sizes and inform their social significance (Bernardi, Chakhaia, and Leopold 2016; McShane et al. 2019). Our results demonstrated that 15% of the variance in employment life course complexity was ascribed to differences across countries, but only 5.5% to change across birth cohorts. Cohort differences accounted for less than 2% of the variance of family complexity, while roughly 10% were due to cross-national differences. This corroborates Van Winkle and Fasang's (2017) and Van Winkle's (2018) argument that cross-cohort differences are relatively small compared to much more substantial cross-national differences. Although our interest lied in the complexity of life courses that extend well beyond the transition to adulthood, recent research on Italian employment trajectories suggests that the complexity of early working lives has increased considerably among recent cohorts (Struffolino 2019). An avenue for future research could be to adapt our methodological approach to examine life course complexity that is concentrated in the transition to adulthood.

Third, the extensions presented in this study provided new information on the systematic cross-country variation in employment and family life course complexity. Specifically, we were able to include two understudies regions: the Baltic (Estonia, Lithuania, and Latvia) and Balkan countries (Slovenia, Croatia, Romania, and Bulgaria). Our findings suggest that the average complexity of family and employment trajectories in the Balkans are similar to levels found in most Southern and Eastern European countries. In contrast, the Baltic countries seem to be split into two groups: Latvia and Lithuania, which are similar to Western and Central European countries, and Estonia, which is more similar to Nordic countries. More research that incorporates the historical political legacies of these countries, e.g., the transformation from state socialism and autocratic regimes to liberal market democracies, is needed to better understand why we find low levels of complexity in the Balkans and medium to high complexity in the Baltic countries.

The inclusion of new countries and birth cohorts contributes to one of the most central debates in European family demography. Are patterns of family formation converging or diverging over time, and do cross-national differences persist or even widen? Most research has contended that cross-national differences are stable or growing rather than converging as suggested by the SDT thesis (Billari and Wilson 2001; Corijn and Klijzing 2001; Elzinga and Liefbroer 2007; Fokkema and Liefbroer 2008; Mills and

Blossfeld 2005; Sobotka and Toulemon 2008). Our results suggest that cross-national differences in the complexity of family life courses are indeed stable on average for a sample of 30 countries. However, our findings also support divergence in cohort change across countries. While the complexity of family trajectories continues to increase across more recent cohorts in a number of Nordic and Western European countries, it has stagnated across most countries, especially in Southern and Eastern Europe as well as the Balkans.

The polarization of trends in family life course complexity maps on to Thévenon's (2011) classification of family policies in OECD countries. The Nordic countries cluster into "family policies of continuous strong support for working parents of children under age three" that will facilitate both family formation and reconfigurations after separation leading to high complexity. The continental European countries combine "high financial support, but limited support to dual earner parents for children under age three," which still makes it difficult for women to combine work and family, possibly leading to a delay of family formation and less complex family lives. In contrast, the Southern and Eastern European countries (with some exception for Hungary) cluster into "limited family support" in relatively restricted welfare states that increase dependence on family members. High dependence on other household members can suppress family events, such as cohabitation and divorce, that create family complexity over the life course (DiPrete and McManus 2000). The results of our weighted analyses that highlight the importance of cohabitation and divorce for cross-cohort differences are in line with this interpretation. For Eastern Europe and the Balkans a drop in fertility during the postsocialist transition period in the 1990s, when they were in their prime childbearing years might further contribute to low family life course complexity (Sobotka 2011). More generally, further analysis should investigate to what extent diverging destinies of a class-specific polarization of family complexity (McLanahan 2004) contribute to average family life course complexity on the country level.

In contrast to country-specific trends for family complexity, employment complexity continues to increase across more recent cohorts for all countries. This is in line with scholars highlighting increasing employment precarity among younger cohorts (Kalleberg and Vallas 2017). However, even if the trend towards more complex employment life courses continues, cross-temporal change would not be as large as cross-national differences for decades to come. While moderate in size against the benchmark of stable cross-national differences, this universal increase is notable. Yet one should not jump to conclusions about similar universal driving forces underlying this trend. It is possible that global economic developments and less employment security in many countries play a role in this increase. Further, for the cohorts born in the 1960s, women's increasing labour market participation and their usually more volatile employment trajectories due to childbearing interruptions might contribute to the increase in

employment complexity in many, if not all, countries. Our analyses performed separately by gender support this interpretation. However, the seemingly similar trend of increasing employment complexity across countries departs from very different country-specific levels and might be driven by country-specific mechanisms. Additional research including macroindicators on employment protection legislation, economic development, labour market restructuring, and changing gender relations in the labour market is needed to investigate whether the most recent moderate increase indeed is driven by common or country-specific factors.

Finally, our study underlines the potential of cross-national comparisons to understand the drivers of both employment and family life course complexity. The bulk of the variation in these outcomes lies in stable differences across countries. Differential life course sociologists and comparative welfare state scholars have long highlighted the importance of institutional arrangements in generating cross-national differences in life courses (Esping-Andersen 1990; Hall and Soskice 2001; Mayer 2009). For example, studies show that employment protection legislation and wage protection rates are associated with intra-generational mobility and employment complexity (Gangl 2003; Tatsiramos and van Ours 2014; Van Winkle and Fasang 2017). Similarly, family policies that incentivize a male-breadwinner female-homemaker division of labour seem to stabilize family life courses. In contrast policies that reduce gender and intergenerational dependencies increase family life course complexity (Van Winkle 2019). The combination of specific macrostructural features as unique country 'packages' seem to create country-specific 'life course mobility regimes' (DiPrete 2002) that are fairly stable across birth cohorts. This stability points to considerable path-dependency in welfare state institutions. However, cultural differences, such as the quality of democracy, trust in institutions, attitudes towards work and family, are likely endogenous to the structural factors above and may drive cross-national and cross-temporal differences in employment and family complexity. To disentangle the combined effects of different institutional features on life course complexity cross-national comparisons therefore seem particularly promising.

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Appendix

Table A-1a: Sample size by country and cohort – employment complexity

	1916-18	1919-21	1922-24	1925-27	1928-30	1931-33	1934-36	1937-39	1940-42	1943-45	1946-48	1949-51	1952-54	1955-57	1958-60	1961-63	1964-66	N
AUT	9	32	44	85	130	159	196	306	419	341	387	365	348	249	295	65	27	3457
DEU (W)	2	12	37	80	107	124	203	297	346	300	321	415	357	285	237	289	32	3444
SWE	27	43	61	122	140	204	258	356	363	501	459	399	352	180	110	78	14	3667
NLD	13	25	54	61	91	133	158	177	217	234	330	272	227	121	20	5	4	2142
ESP	32	68	108	215	281	381	430	338	419	496	488	519	536	461	416	155	42	5385
ITL	8	34	64	108	175	261	313	407	496	475	607	492	452	490	355	307	93	5137
FRA	14	53	102	163	194	232	264	298	282	350	459	472	484	385	283	169	77	4281
DNK	17	32	59	87	125	154	170	219	264	331	367	357	388	436	342	311	110	3769
GRC	19	39	78	117	191	201	309	300	281	378	390	488	473	284	219	136	79	3982
CHE	17	23	42	81	110	147	169	212	208	307	281	285	285	297	237	36	15	2752
BEL	10	59	129	173	234	275	323	382	361	449	582	555	553	530	444	358	139	5556
ISR	2	3	13	35	70	91	153	171	143	165	262	228	251	162	117	70	29	1965
CZE	4	19	62	74	135	248	333	312	459	599	690	619	515	492	248	106	41	4956
POL	5	24	43	96	162	161	225	281	294	320	522	591	630	590	474	414	361	5193
IRE	4	8	18	26	40	43	63	66	77	98	103	100	94	57	16	2	3	818
LUX	1	2	5	3	27	38	36	43	90	79	137	126	145	159	169	91	26	1177
HUN	0	0	2	14	25	41	68	94	130	157	175	231	210	182	117	23	11	1480
PRT	0	0	3	5	13	16	18	26	39	44	54	37	63	88	58	10	1	475
SVN	0	7	14	39	102	145	205	247	302	298	363	445	460	402	330	165	63	3587
EST	1	8	23	75	164	263	333	413	468	410	482	497	477	451	421	357	157	5000
HRV	0	2	5	15	29	49	79	117	185	169	228	267	272	290	264	245	53	2269
LTU	0	1	2	18	42	81	106	106	138	144	148	167	154	219	206	191	177	1900
BUL	0	1	2	9	18	59	91	127	125	185	190	214	182	177	169	160	139	1848
CYP	1	4	7	21	32	48	82	94	76	121	127	110	97	94	86	67	69	1136
FIN	0	0	7	17	26	51	65	101	139	140	198	197	210	197	193	196	135	1872
LVA	0	3	5	14	27	69	97	114	128	122	144	165	152	154	176	165	130	1665
MLT	0	0	2	8	19	35	50	69	52	136	152	142	134	141	126	109	44	1219
ROU	1	3	2	11	27	44	62	100	103	128	156	226	242	266	241	181	131	1924
SVK	1	0	0	3	5	12	28	47	93	92	132	194	264	246	284	261	261	1923
DEU (E)	2	2	11	17	29	39	65	86	99	89	95	118	109	94	73	105	13	1046
N	190	507	1004	1792	2770	3804	4952	5906	6796	7658	9029	9293	9116	8179	6726	4827	2476	

Table A-1b: Sample size by country and cohort – family complexity

	1916-18	1919-21	1922-24	1925-27	1928-30	1931-33	1934-36	1937-39	1940-42	1943-45	1946-48	1949-51	1952-54	1955-57	1958-60	1961-63	1964-66	N
AUT	10	30	45	85	128	161	207	331	446	361	414	387	370	273	319	65	30	3662
DEU (W)	1	13	38	81	110	124	210	316	363	313	355	463	401	316	253	314	35	3706
SWE	25	42	62	130	144	216	277	377	396	558	512	448	393	206	127	87	14	4014
NLD	12	25	54	65	92	134	159	185	225	239	346	290	249	138	15	0	0	2228
ESP	33	66	112	216	278	388	437	360	443	520	514	539	553	479	415	151	40	5544
ITL	8	36	68	108	181	270	324	427	522	487	636	526	466	526	379	333	100	5397
FRA	15	51	103	161	212	244	290	302	305	371	494	499	511	426	302	165	84	4535
DNK	18	33	59	93	126	165	177	229	282	360	406	381	419	466	354	312	113	3993
GRC	19	35	77	118	191	205	316	308	288	390	414	503	499	302	199	115	79	4058
CHE	17	24	42	83	118	149	175	221	216	334	300	295	319	325	242	31	19	2910
BEL	9	59	128	180	237	282	331	392	379	481	630	612	640	609	514	404	157	6044
ISR	0	3	9	27	66	91	148	164	147	175	275	240	263	173	126	74	29	2010
CZE	3	18	62	69	134	247	339	309	461	606	691	628	530	492	248	102	34	4973
POL	5	24	44	93	163	170	234	290	301	332	532	616	649	613	491	407	374	5338
IRE	4	7	17	27	40	45	64	68	79	100	107	107	97	60	19	0	0	841
LUX	1	2	5	3	27	39	37	45	90	83	142	129	158	166	179	99	26	1231
HUN	0	0	2	13	27	42	72	98	129	160	179	235	217	188	116	24	10	1512
PRT	0	0	2	2	12	13	16	25	39	45	59	37	66	90	62	12	1	481
SVN	0	5	14	33	95	143	212	249	311	299	370	449	466	412	339	171	64	3632
EST	1	7	22	67	155	248	326	415	456	404	478	499	477	443	419	357	156	4930
HRV	0	2	6	14	28	52	84	125	188	175	234	276	282	304	273	256	55	2354
LTU	0	1	1	18	42	84	107	111	145	150	149	170	157	223	218	201	186	1963
BUL	0	1	2	10	18	60	94	128	129	190	200	223	192	188	176	169	149	1929
CYP	1	4	7	20	32	46	81	98	77	125	134	113	101	96	88	70	76	1169
FIN	0	0	7	17	28	47	66	103	146	147	215	203	228	198	199	203	144	1951
LVA	0	3	4	13	26	68	98	111	130	121	144	165	155	154	177	167	136	1672
MLT	0	0	2	8	18	36	50	67	51	136	155	146	136	141	128	111	45	1230
ROU	1	3	2	12	32	44	71	107	110	135	166	235	252	277	252	186	135	2020
SVK	1	0	0	3	5	12	29	47	94	93	135	196	275	249	296	268	268	1971
DEU (E)	2	2	11	16	30	40	71	88	100	93	102	124	112	100	76	114	15	1096
N	186	496	1007	1785	2795	3865	5102	6096	7048	7983	9488	9734	9633	8633	7001	4968	2574	

Table A-2a: Average number of transitions by country and cohort – employment complexity

	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66
AUT	1.11	2.50	2.07	2.47	2.25	2.18	2.27	2.48	2.67	2.66	2.50	2.56	2.77	2.67	2.69	3.22	3.33
DEU (W)	0.00	2.42	3.11	2.85	2.34	2.42	2.43	2.67	2.75	3.01	3.09	2.99	2.88	3.32	3.52	3.23	3.41
SWE	3.11	3.40	2.87	3.02	3.01	3.65	3.22	3.56	3.64	3.79	3.74	3.97	3.94	4.11	4.06	3.95	4.21
NLD	2.38	2.40	2.78	2.89	2.89	2.78	3.22	3.01	3.43	3.34	3.55	3.46	3.90	4.17	4.30	4.60	5.75
ESP	0.88	1.04	1.04	1.06	1.19	1.34	1.48	1.74	1.60	1.65	1.88	1.99	2.16	2.31	2.32	2.39	3.21
ITL	1.25	0.94	1.55	1.43	1.64	1.61	1.71	1.83	1.96	1.84	2.01	2.11	1.99	2.06	1.95	2.07	1.94
FRA	1.93	2.00	2.38	2.47	2.30	2.53	2.70	2.77	3.14	2.91	3.09	3.14	3.19	3.29	3.37	3.84	3.30
DNK	4.00	3.81	3.03	3.41	4.35	3.87	4.16	4.13	4.17	4.19	4.58	4.60	4.60	4.86	4.56	4.93	4.68
GRC	0.63	0.56	0.79	0.58	0.92	0.99	1.11	1.23	1.26	1.36	1.44	1.52	1.74	1.60	1.89	2.01	2.06
CHE	2.18	3.52	2.57	3.25	3.51	3.35	3.67	3.70	4.00	3.97	3.88	4.11	4.16	3.88	4.18	4.69	4.87
BEL	1.90	2.46	2.07	2.16	2.26	2.37	2.57	2.58	2.62	2.73	2.72	2.77	3.11	3.07	3.34	3.40	3.30
ISR	0.00	1.00	1.15	1.37	1.86	1.90	1.93	1.99	2.25	2.48	2.56	2.55	2.46	2.45	2.55	2.44	1.86
CZE	1.75	1.68	2.66	2.09	2.28	2.35	2.25	2.24	2.28	2.61	2.63	2.66	2.95	3.03	3.16	3.39	3.63
POL	0.80	1.54	1.40	1.81	1.59	2.09	2.19	2.13	2.37	2.60	2.89	3.02	3.13	3.37	3.05	2.95	3.11
IRE	3.00	1.25	2.00	2.27	2.08	2.16	2.86	2.47	2.90	3.64	3.24	3.31	2.70	2.72	2.75	4.00	3.33
LUX	5.00	1.00	1.60	2.00	1.19	1.76	1.94	2.09	2.13	1.97	2.42	2.45	2.37	2.67	2.62	2.92	3.38
EST	2.00	2.50	3.57	2.47	2.85	2.70	3.02	3.09	3.06	3.47	3.72	3.60	3.89	3.68	3.97	3.70	3.63
CYP	1.00	0.00	1.00	0.67	1.03	0.96	1.24	1.73	1.09	1.39	1.88	1.95	2.18	1.83	2.14	2.49	2.10
ROU	1.00	0.67	0.50	0.91	1.15	1.18	1.29	1.47	1.72	1.81	1.84	2.13	2.43	2.21	2.41	2.64	2.33
SVK	0.00			0.33	1.00	1.92	1.61	1.66	1.78	1.53	1.77	1.65	1.75	1.82	1.94	2.03	1.96
DEU (E)	3.00	2.50	4.36	3.65	3.41	3.00	3.09	3.02	3.15	3.35	3.43	3.35	3.80	3.99	3.51	3.53	3.23
SVN		1.29	1.29	1.41	1.94	1.63	1.91	2.24	2.19	2.37	2.31	2.52	2.48	2.46	2.51	2.41	2.73
HRV		1.00	1.20	0.73	1.45	1.27	1.30	1.97	1.84	2.12	2.36	2.48	2.50	2.64	2.91	2.80	2.98
LTU		4.00	1.00	1.78	1.98	2.47	2.87	2.37	2.83	2.98	3.41	3.33	3.49	3.53	3.41	3.65	3.39
BUL		2.00	3.50	1.78	2.67	1.97	2.38	2.28	2.38	2.40	2.55	2.62	2.70	2.53	2.92	2.88	3.18
LVA		2.00	1.60	2.07	2.04	2.57	2.40	2.37	2.47	2.89	3.27	2.87	3.11	3.32	3.32	3.26	3.55
HUN			2.00	2.00	1.92	1.78	2.25	2.26	2.13	2.51	2.53	3.00	2.73	2.94	2.85	2.17	3.91
PRT			1.33	0.40	0.54	0.44	1.00	1.31	1.08	1.59	1.67	1.54	1.52	1.50	1.28	1.40	0.00
FIN			2.00	1.82	2.31	2.43	2.82	3.01	3.28	3.56	3.48	4.01	3.48	4.08	3.88	4.24	4.59
MLT			0.50	0.75	0.89	1.03	1.04	1.59	1.25	1.73	2.16	2.20	2.15	2.35	2.08	2.43	2.82

Table A-2b: Average number of transitions by country and cohort – family complexity

	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66	1964-66
AUT	1.80	1.90	1.96	2.05	2.04	2.02	1.99	2.14	2.16	2.26	2.23	2.24	2.49	2.44	2.41	2.43	2.33
DEU (W)	3.00	2.00	2.11	2.21	2.04	2.07	2.04	2.13	2.24	2.37	2.40	2.44	2.54	2.57	2.62	2.75	2.80
SWE	2.20	2.31	2.16	2.35	2.21	2.38	2.44	2.55	2.66	2.73	2.86	3.08	3.14	3.36	3.18	3.37	3.29
NLD	1.92	1.76	1.70	1.94	1.96	1.99	2.00	2.10	2.12	2.21	2.21	2.33	2.33	2.45	2.27		
ESP	1.73	1.59	1.79	1.72	1.76	1.86	1.84	1.92	1.83	1.82	1.86	1.81	1.86	1.87	1.95	2.02	2.15
ITL	2.50	1.69	1.85	1.87	1.82	1.79	1.82	1.87	1.87	1.85	1.83	1.89	1.85	1.88	1.82	1.92	1.88
FRA	2.47	2.08	2.10	1.94	1.99	2.03	2.21	2.18	2.23	2.29	2.43	2.52	2.49	2.56	2.67	2.82	2.81
DNK	2.28	2.27	2.24	2.41	2.24	2.27	2.37	2.61	2.60	2.70	2.95	3.03	3.24	3.21	3.15	3.28	3.34
GRC	1.74	1.89	1.71	1.82	1.80	1.83	1.79	1.92	1.83	1.95	1.93	1.91	1.91	1.87	1.86	1.85	2.05
CHE	1.76	1.92	1.98	2.07	2.30	2.07	2.22	2.14	2.31	2.37	2.58	2.83	2.85	2.75	2.66	2.55	2.63
BEL	1.78	1.90	1.84	1.93	1.90	1.90	1.94	1.98	2.09	2.16	2.13	2.25	2.36	2.44	2.55	2.54	2.46
CZE	2.00	1.89	1.94	1.96	1.96	1.96	1.98	2.05	2.08	2.16	2.09	2.17	2.11	2.14	2.20	2.07	2.06
POL	1.80	1.92	1.98	1.94	1.89	1.86	1.88	1.87	2.01	1.93	2.00	1.94	1.90	1.94	1.78	1.77	1.90
IRE	2.50	2.00	1.71	1.93	1.77	1.96	1.98	2.15	2.22	2.30	2.05	2.19	2.29	2.40	2.16		
LUX	1.00	2.00	1.80	2.00	1.70	1.97	2.08	1.93	2.08	1.99	2.23	2.12	2.32	2.23	2.38	2.43	2.38
EST	2.00	2.14	2.41	2.22	2.48	2.40	2.48	2.53	2.48	2.47	2.51	2.54	2.60	2.60	2.57	2.52	2.54
CYP	2.00	1.75	2.00	2.00	1.94	1.80	1.89	2.03	1.92	1.95	1.99	2.00	1.92	2.03	2.00	2.06	2.05
ROU	2.00	1.67	1.50	1.83	1.88	2.00	2.03	1.99	2.02	2.00	2.04	1.99	2.11	2.08	1.99	1.96	1.96
SVK	1.00			1.33	2.00	1.83	1.79	1.85	1.70	1.76	1.77	1.66	1.72	1.69	1.65	1.79	1.69
DEU (E)	2.00	2.00	2.55	2.13	2.13	1.85	2.00	2.25	2.15	2.23	2.17	2.29	2.40	2.22	2.43	2.66	2.40
ISR		2.00	2.11	1.89	2.06	1.87	1.95	2.03	1.93	1.93	1.96	1.99	1.98	1.89	1.86	1.77	1.66
SVN		2.00	1.93	1.88	1.83	1.78	1.90	1.87	1.91	1.92	1.89	1.81	1.93	1.92	1.86	1.90	1.89
HRV		2.00	1.83	1.93	1.82	1.87	1.93	2.01	2.04	1.92	1.95	2.04	1.96	1.92	1.88	1.97	1.82
LTU		2.00	1.00	2.28	2.24	2.35	2.24	2.33	2.29	2.24	2.35	2.26	2.41	2.37	2.37	2.23	2.41
BUL		2.00	2.00	2.00	2.22	1.85	1.90	1.95	1.82	1.92	1.93	1.96	1.91	2.00	1.88	1.98	2.05
LVA		1.67	2.75	2.38	2.12	2.35	2.36	2.41	2.35	2.42	2.54	2.45	2.56	2.50	2.47	2.41	2.31
HUN			2.00	2.00	1.85	1.93	2.08	2.27	1.98	2.01	2.09	2.18	2.12	2.13	2.12	1.92	2.40
PRT			1.50	1.50	1.92	1.69	1.88	1.80	1.87	2.00	2.00	1.95	1.97	1.90	1.84	1.67	2.00
FIN			1.86	2.18	2.07	1.98	2.06	2.36	2.28	2.45	2.46	2.43	2.63	2.67	2.79	3.00	3.08
MLT			1.50	2.00	1.33	1.75	1.68	1.66	1.65	1.69	1.82	1.68	1.79	1.72	1.76	1.82	1.89

Table A-3: Cross-classified decomposition results by gender

	Men		Women	
Fixed Effects	Employment (Interacted)	Family (Interacted)	Employment (Interacted)	Family (Interacted)
Constant	13.01	14 – 27	11.74	13.28
	[11.78 – 14.24]	[13.68,14.85]	[9.87,13.61]	[12.57,13.98]
Random Effects				
Var(Country) –	8.62	2.18	15.39	2.78
ψ_j	[5.12 – 14.52]	[1.28 – 3.70]	[9.17 – 25.84]	[1.64 – 4.69]
Var(Cohort) –	1.64	0.22	6.73	0.59
ψ_k	[0.77 – 3.49]	[0.09 – 0.55]	[3.32 – 13.65]	[0.27 – 1.27]
Var(Interaction) –	0.34	0.51	0.37	0.45
ψ_{jk}	[0.21 – 0.54]	[0.40 – 0.65]	[0.25 – 0.55]	[0.35 – 0.56]
Var(Individual) –	62.75	24.19	62.34	22.13
σ	[61.86 – 63.66]	[23.85 – 24.54]	[61.54 – 63.14]	[21.86 – 22.41]
Intraclass Correlations				
$\rho_{Country}$	11.75	8.01	18.14	10.68
ρ_{Cohort}	2.23	0.81	7.93	2.27
N – Individuals	38,095	38,736	46,930	49,658
N – Countries	30	30	30	30
N – Cohorts	17	17	17	17

Note: Unstandardized regression coefficients displayed; 95% confidence intervals in brackets. Data not weighted.

Table A-4: Intraclass correlations of decompositions weighted by employment and family state durations

	Education	Unemployment	Retirement	OLF	1 FT	2 FT	3 FT	4 FT	5 FT	1 PT	2 PT	3 PT	4 PT	5 PT
$\rho_{Country}$	15.32	7.05	8.42	6.78	8.16	9.00	9.12	9.21	8.78	11.65	12.34	11.94	12.18	12.48
ρ_{Cohort}	9.24	5.18	3.05	0.64	5.51	3.49	2.64	2.15	1.94	4.66	4.70	4.65	4.54	4.70

	Parental Home	Parental Home Children	Single	Single Children	Cohabitation	Cohabitation Children	Marriage	Marriage Children	Divorce	Divorce Children
$\rho_{Country}$	3.32	5.76	13.55	4.07	6.22	5.66	5.48	3.80	4.66	4.32
ρ_{Cohort}	0.00	0.67	0.89	0.82	2.73	2.07	0.69	0.50	0.91	2.15